Ionization X-ray Apparatus (Cont.) SOV/3149

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SOV/101-59-3-6/10

15(6)

AUTHOR: Volkonskiy, B.V.

TITLE: Some Peculiarities in the Microstructure of Clinker Produced in a Reducing Medium

PERIODICAL: Tsement, 1959, Nr 3, pp 25-27 (USSR)

ABSTRACT: The author states that many cement plants practice water cooling of clinker leaving the cooling zone of the kiln with a temperature of 1000°C or higher, to improve the operating conditions of recuperators, or of a cooler. The steam formed in this way enters with the air into the burning zone and causes a reducing atmosphere in the calcination zone. The abrupt cooling fixes the incomplete process of the clinker formation thus giving a clinker of unusually-unbalanced phase structure. In an experiment with grouting cement, carried out in 1958 at the Novo-Troitskiy tsementnyy zavod (Novo-Troitsk Cement Plant), with the assistance of scientists from "Giprotsement", it was stated that the mentioned conventional cooling

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Some Peculiarities in the Microstructure of Clinker Produced in a Reducing Medium

gave cement of a structure characteristic for high-alite clinkers with up to 70% C_3S. The alite crystals had a maximum size of 90 to 100 microns; their mean size was 40 to 50 micron (Photo, Figure 1). The bending strength of cement made from this clinker was 45.0 to 49.5 kg/cm^2, in specimens of 48 hours maturity. The microsturcture of clinker water-cooled in the kiln largely differed from the usual, and it is of interest as it helps to show why the clinker failed in standard GOST tests. It had zonal structure (Figure 2), with alite at the surface, alite alternated with belite and intermediate matter layers in the second zone, and alite clearly predominating in the third zone, with considerable quantity of black glassy matter, and of secondary free calcium oxide. The core of clinker was poorly crystallized; it was a mass of alite with nearly no intermediate matter.

KONOVALOV, P.F.; YEFREMOV, A.I.; VOLKONSKIY, B.V.; TOROPOV, N.A., prof., doktor tekhn.nauk, red.; SAIKOV, V.I., red.

[X-ray analysis ionization chamber for investigating crystalline materials at various temperatures] Ionizatsionnaia rentgenostrukturnaia ustanovka dlia issledovaniia kristallicheskikh veshchestv pri razlichnykh temperaturakh. Pod red. N.A.Toropova. Leningrad, Nauchno-tekhn.ob-vo promyshl.stroit.materialov, Leningr. obl.prav., 1958. 133 p. (MIRA 12:3)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Toropov).
(X-ray crystallography--Equipment and supplies)

VOLKONSKIY, B. V. and V. I. SADKOV

"X-ray and Petrographic Studies of Tri-calcium Aluminate in the Presence of Fluorides at High Temperatures" p. 415

Transactions of the Fifth Conference on Experimental and Applied Mineralogy and Petrography, Trudy ... Moscow, Izd-vo AN SSSR, 1958, 516pp.

reprints of reports presented at conf. held in Leningrad, 26-31 Mar 1956. The purpose of the conf. was to exchange information and coordinate the activities in the fields of experimental and applied mineralogy and petrography, and to stress the increasing complexity of practical problems.

VOLKONSKIY, B.V.

USSR/ [illegible]

B-5

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18266

Author : B.V. Volkonskiy, V.I. Sadkov.
Inst : All-Union State Institute for Projecting and Scientific Research Work in Cement Industry.
Title : Modification of Interplanar Distances in Crystal Lattices of Refractory Brick Minerals under Temperature Influence.

Orig Pub : Tr. Gos. Vses. in-ta po proyektir. i nauch.-issled. rabotam v tsement. prom-sti, 1956, vyp. 19, 126-132.

Abstract : It was established radiographically that the interplanar distances in crystal lattices of the most important minerals in refractory bricks change evenly with the temperature. The greatest change of the interplanar distances in the crystal lattice characterizes alumocalcium ferrites and free CaO among the refractory brick minerals.

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VOLKONSKII, B.V.

USSR / Structural Crystallography. E-3

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9234

Author : Volkonskiy, B.V., Sadkov, V.I.
Title : Change in Interplanar Distances of the Crystalline Lattice of Clinker Minerals Under the Influence of Temperature.

Orig Pub : Tr. Gos. Vses. in-ta po proyektir. i nauch. - issled. rabotam v tsement. prom-sti, 1956, vyp. 19, 126-132

Abstract : No abstract

Card : 1/1

VOLKONSKIY, B.V., kand.tekhn.nauk

Technical consultation. TSement 29 no.1:21 Ja-F '63. (MIRA 16:2)
(Cement plants)

VOLKONSKIY, B.V.; SADKOV, V.I.

Growth speed of crystals of calcium silicates. Trudy Giprotsement no.24:155-169 '62. (MIRA 16:4)

(Calcium silicate)

VOLKONSKIY, G.I.

A method for standardizing the quantity of fabric for light women's dresses in mass production. Leg.prom. 14 no.4:23-26 Ap '54. (MLRA 7:6)

1. Rukovoditel' gruppy normirovaniya eksperimental'nogo tsekha Moskovskoy shveynoy fabriki No.18. (Dressmaking)

VOLKONSKIY,G.I.

Efficient way of laying out a pattern. Leg.prom.15 no.7:10-15 J1'55. (MLRA 8:10)

(Tailoring)

VOLKONSKIY, M. N.

Conveying machinery

Machine for bending blades of worm conveyors. Rab. energ. 2, No. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

1. VOLKONSKIY, M. N.

2. USSR (600)

4. Milling Machinery

7. Sealing the neck of a mill. Rab. energ. 2 no. 10, 1952.

9. **Monthly List of Russian Accessions**, Library of Congress, January, 1953. Unclassified.

VOLKONSKIY, N.A.

The need for irrigation in the northwestern part of the Caspian region in connection with the lowering of the sea level. Trudy Okean. kom. 5:333-338 '59. (MIRA 13:6)
(Caspian depression--Irrigation)

VOLKONSKIY, N. A., Cand Tech Sci (diss) -- "Soil-improvement measures in the northwestern Caspian coastal region". Astrakhan, 1960. 15 pp (Min Agric USSR, Novocherkassk Soil Improvement Engineering Inst), 150 copies (KL, No 15, 1960, 134)

VOLKONSKIY, O., inzhener.

Apparatus for starting engines after repair. Avt.transp. 32 no.2:36 F '54. (MLRA 7:6)
(Automobiles--Starting devices)

VOLKONSKIY, O.

Organizing the work of defective equipment sections of truck repair plants. Avt.transp.33 no.6:25-26 Je '55. (MLRA 8:10)

1. Dnepropetrovskiy avtoremontnyy zavod Ministerstva avtomobil'nogo transporta i shosseynykh dorog SSSR
(Motor trucks--Maintenance and repair)

NIKOLAY, Sht.G., akad.; ALTERASH, I., doktor; AVRAM, A., doktor; KOZHOKARY, I., doktor; VOLKONSKIY, V., doktor

Mycosis of the scalp treated with epilin. Vest.derm.i ven. 34 no.8:23-26 '60. (MIRA 13:11)

1. Iz Bukharestskogo dermato-venerologicheskogo tsentra (dir. - akad. Sht. Nikolay), Rumyniya.
(MEDICAL MYCOLOGY) (SCALP—DISEASES) (FUNGICIDES) (HAIR, REMOVAL OF)

VOLKONSKIY, V.A

VOLKONSKIY, V.A.

A multidimensional limit theorem for homogeneous Markov chains with a countable set of states [with summary in English]. Teor. veroiat. i ee prim. 2 no.2:230-255 '57. (MLRA 10:11)
(Limit theorems (Probability theory))
(Markov chains)

VOLKONSKIY, V.A

SOV/52-3-2-10/10

AUTHOR: None Given

TITLE: A Summary of Papers Presented at the Sessions of the Scientific Research Seminar on the Theory of Probability, Moscow, September-March 1957-1958 (Rezyume dokladov, sdelannykh na zasedaniyakh nauchno-issledovatel'skogo seminara po teorii veroyatnostey, Moskva, sentyabr'-mart 1957-58 g.)

PERIODICAL: Teoriya veroyatnostey i yeye primeneniya, 1958, Vol III, Nr 2, pp 212-216 (USSR)

ABSTRACT: A. N. Kolmogorov - Ergodic stationary random processes with a discrete spectrum. If S is a set of numbers and $\xi(t)$ is a stationary ergodic function defined for all random values of t as

$$\xi(t) = \sum_{\lambda \in S} \varphi(\lambda) e^{i\lambda t}$$

then $\rho(\lambda) = |\varphi(\lambda)|$ is not random. Therefore, the unit probability can be expressed as $\rho(\lambda) = +\sqrt{f(\lambda)} > 0$ and $\varphi(\lambda) = \rho(\lambda) e^{i\theta(\lambda)}$ where $\theta(\lambda)$ is defined as mod 2π and represents a random element of the space A_S of all the

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A Summary of Papers Presented at the Sessions of the Scientific Research Seminar on the Theory of Probability, Moscow, September-March 1957-1958

functions $\alpha(\lambda)$. The space A_S represents a compact group with a sub-group B_S . The factorial group

$\Gamma_S = A_S - B_S$ will determine the distribution of the function $\xi(t)$ becoming isomorphic of the other two.

Ye. B. Dynkin - Infinitesimal operators of "jump" Markov processes. Published in Vol III, Nr 1 of this journal.

V. A. Volkonskiy - A random change of time in strictly Markov processes. If $x_t = x(t, \omega)$ is a homogeneous Markov process on the space $\mathcal{E}$ and $\tau_t(\omega)$ is a function non-decreasing at all ω , and that $\tau_t(\omega)$ at all t is a random value not dependent on future, then the function $y(t, \omega) = x(\tau_t(\omega), \omega)$ is a process obtained from x_t with random change of time τ_t . At some conditions of τ_t the

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the process y_t becomes a homogeneous strictly Markov process. In the case of a homogeneous process with a random change of time and a uniform deformation of space it is possible to obtain any continuous Markov process which will be regular in the interior and absorbed near the boundary.

R. L. Dobrushin - A statistical problem of detecting a signal in the noise of a multi-channel system reduced to stable distribution laws. Published in this issue.

V. M. Zolotarev - Some new properties of stable distribution laws. Published in Vol II, Nr 4 of this journal.

R. A. Minlos - On the extension of the generalized random process to additive measure. Any exact process, such as Gelfand's, based on the cylindrical set of numbers on linear topologic space E' and extended into a space E will retain its additive property defined as the set B on the space E' . (There are 2 references, 1 Soviet and 1 French).

D. M. Chibisov - Limit distribution for the number of runs in a Bernouilli Trials. If k represents a number of independent runs in two trials, the probability of a positive

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trial being p and a negative trial being $q = 1 - p$, then at i-run ($i \geqslant r$) a series r can be found: i-r+1, i-r+2 ... The trial (i) will be positive and the trial (i-r) negative ($i \geqslant r + 1$). The number of series r is N. The conditions for p, q, r, $k \to \infty$ are given by (1) (2) and (3).

A. N. Kolmogorov - Spectra for dynamical systems generated by the stationary stochastic process. Displacements of a trajectory on the space of a random stationary process generate the dynamic systems for which the probability distribution is invariant. If the process is normal then the spectra of dynamical systems are homogeneous. In the case of discrete time its multiple for a separable process can be calculated. For the continuous time only some examples of calculated multiple are known. The above can be illustrated by the entropy per unit of time considered as a metric invariant of a dynamical system. As in the case of discrete

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time a normal process with a short multiple spectrum can be defined also for a continuous duration of entropy. Therefore a solution can be obtained for a problem in metric theory of dynamical system existing as a transitory set of the non-spectral invariant.

I. V. Girsanov - Some examples of dynamical systems with a continuous spectrum. If $x(t, \omega)$ is a substantial Gaussian process and $F(dx)$ is its continuous spectrum, then the displacement $S_\tau x(t, \omega)$ retains its value on the space of trajectory, thus defining a certain dynamical system. The system is related to a group of the unitary operators U^τ on the Hilbert space H which describes the substantial functionals of trajectory. The spectrum of the group U^τ is described by the maximum ρ and the multiple function $\nu(x)$. It has been proved that $\rho = \sum F^i$ where F^i represents i-composition of F. If X is a complete numerical set, F_o a continuous value having X as its carrier, then the spectral process $F(dx) = F_o(dx)$ has a single spectrum with

the maximum ρ. The cyclic vector on H can be described as a series of stochastic integrals. In the case of $F(dx) = F_o(dx) + F_o^2(dx)$ the process has the same maximum ρ but the spectrum will not be simple. Generally, it can be stated that: if a spectrum F of a process $x(t, \omega)$ has a definite value then the spectrum of a dynamical system defined by this process contains only single components.

M. G. Shur "Ergodic properties of invariant Markov chains on homogeneous spaces". Published in this issue.

B. A. Sevast'yanov "Branching stochastic processes for particles diffusing in a restricted domain with absorbing boundaries". Published in this issue.

B. A. Rogozin "Some problems in the field of limit theorems". Published in this issue.

V. Sazonov "On characteristic functionals". Published in this issue.

Card 6/6 There are 2 references, 1 Soviet, 1 English.

SOV/52-3-3-5/8

AUTHOR: Volkonskiy, V. A.

TITLE: Random Substitution of Time in Strong Markov Processes (Sluchaynaya zamena vremeni v strogo Markovskikh protsessakh)

PERIODICAL: Teoriya veroyatnostey i yeye primeneniya, 1958, Vol 3, Nr 3, pp 332-350 (USSR)

ABSTRACT: If $x(t, \omega)$ is a homogeneous Markov process and $\tau_t(\omega)$ is a random function not decreasing for increasing t, then the process $y_t = x(\tau_t(\omega), \omega)$ is called a process obtained from $x_t(\omega)$ by means of a random substitution of time τ_t. The conditions satisfying the process y_t to be a Markov or a strong Markov process are: First, $\tau_{t+h} - \tau_t = \theta_{\tau_t} \tau_h$ for any t and $h>0$ (Theorem 1). Second, the values $\varphi(\omega)$ and $\tau_{\varphi(\omega)}(\omega)$ are independent from the process y_t and x_t respectively and $\tau_{\varphi+h} - \tau_\varphi = \theta_{\tau_\varphi} \tau_h$ for $h>0$ and any $\varphi(\omega)$

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Random Substitution of Time in Strong Markov Processes

is independent from y_t (strong Markov processes) (Theorem 2). Therefore, it can be stated that if $\tau_t(\omega)$ can be defined from the Eq.(2), then $y_t = x(\tau_t)$ represents a condition on the right, homogeneous strong Markov process, i.e. y_t is obtained from x_t and function $\varphi(x)$. It was shown (Ref.1) that the infinitesimal operator A of a Feller strong Markov process continuous on the right, is a contraction of a certain operator $\mathfrak{A}$ which is called the extended operator. It is shown that if x_t and $x(\tau_t)$ are Feller processes continuous on the right and τ_t is determined by the Eq.(2), where $\varphi(x)>0$ are continuous, then their extended operator is $\mathfrak{A}$, satisfying the equation $t = \varphi(x)\mathfrak{A}$ (Theorem 3). An example is given where $\mathcal{E}$ - finite population. Then the process x_t is characterised by the density probability matrix of the transition $a_{xy}(x, y = 1,\ldots,n)$ and its operator $\mathfrak{A}$ which can be determined from the equation:

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Random Substitution of Time in Strong Markov Processes

$$\overline{\Omega}f(x) = \sum_y \varphi(x)a_{xy}f(y) \quad ,$$

i.e. the matrix will be equal $\bar{a}_{xy} = \varphi(x)a_{xy}$. The density probability at the moment $y \neq x$ will be $a_{xy}/-a_{xx}$; the distribution of density will be equal to

$$-a_{xx}e^{-a_{xx}t}$$ and the mathematical expectation

$1/-a_{xx}$. Therefore, the process y_t can be obtained from the process x_t if for $x \in G$ such a time is determined for which $\varphi(x)$ is defined as unity. It is possible to consider only a one-dimensional homogeneous strong Markov regular continuous process. This can be obtained from a Wiener process (Ref.6) by means of a random substitution of time and a monotone transformation of the segment (Theorem 4). As an

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example, the operator of a diffused process is given as:

$$\mathfrak{A} = D_v D_u = a(x)\frac{d}{dx} + b(x)\frac{d^2}{dx^2} \quad .$$

It can be seen that:

$$u(x) = w\int e^{-\int_{\beta}^{x}\frac{a(y)}{b(y)}dy} dx, \quad v(x) = \frac{1}{w}\int b^{-1}(x)e^{\int_{\beta}^{x}\frac{a(y)}{b(y)}dy} dx \quad ,$$

where w - a constant, ψ and the equation for τ_t are found from Eqs.(4)-(6'). The equation for τ_t is simply evaluated when:

$$\mathfrak{A} = b(x)\frac{d^2}{dx^2} \quad , \text{ that is, } \int_0^{\tau_t}\frac{ds}{b(x_s)} = t \quad .$$

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Random Substitution of Time in Strong Markov Processes

It should be noted that the terminology and symbols used are the same as in Refs.1 and 7. There are 12 references, all of which are Soviet.

SUBMITTED: March 12, 1958.

16(1)
AUTHOR: Volkonskiy, V.A. SOV/20-127-4-1/60

TITLE: Additive Functionals of Markov Processes

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 4, pp 735-738 (USSR)

ABSTRACT: Ye.B.Dynkin [Ref 1] has proved that between the homogeneous subprocess of a homogeneous Markov process and the homogeneous multiplicative functionals of the process there exists a one-to-one relation. Instead of the multiplicative functionals α the author considers the additive functionals $\varphi = -\ln \alpha$. These are represented as a sum $\varphi = \overline{\varphi} + \overline{\overline{\varphi}}$, where $\overline{\varphi} = \overline{\varphi}_t(\omega)$ is continuous in t, while $\overline{\overline{\varphi}} = \overline{\overline{\varphi}}_t(\omega)$ equals the sum of their jumps on the interval $[0, t]$. Considering the continuous additive functionals, the author introduces the excessive function $m(x) = M_x \varphi_\infty(\omega)$ as the most essential characteristic. The author gives conditions under which the functional is determined uniquely by this function. For discontinuous additive functionals the author restricts himself to the consideration of so-called standard processes already considered by Hunt [Ref 2], and the inverse process [Ref 4].

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There are 5 theorems without proof. The author thanks Ye.B. Dynkin for the leading of the investigations.
There are 7 references, 4 of which are Soviet, 2 American, and 1 German.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut Komiteta standartov, mer i izmeritel'nykh priborov (All-Union Scientific Research Institute of the Committee of Standards, Measures and Measuring Instruments)

PRESENTED: April 18, 1959, by A.N.Kolmogorov, Academician

SUBMITTED: April 7, 1959

VoLKoNSKiy, V.A.

16(1) PHASE I BOOK EXPLOITATION SOV/2660

Vsesoyuznyy matematicheskiy s"yezd. 3rd, Moscow, 1956

Trudy. t. 4: Kratkoye soderzhaniye sektsionnykh dokladov. Doklady inostrannykh uchenykh (Transactions of the 3rd All-Union Mathematical Conference in Moscow. vol. 4: Summary of Sectional Reports. Reports of Foreign Scientists) Moscow, Izd-vo AN SSSR, 1959. 247 p. 2,200 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Matematicheskiy institut.

Tech. Ed.: G.N. Shevchanko; Editorial Board: A.A. Abramov, V.G. Boltyanskiy, A.M. Vasil'yev, B.V. Medvedev, A.D. Myshkis, S.M. Nikol'skiy (Resp. Ed.), A.G. Postnikov, Yu. V. Prokhorov, K.A. Rybnikov, P. L. Ul'yanov, V.A. Uspenskiy, N.G. Chetayev, G. Ye. Shilov, and A.I. Shirshov.

PURPOSE: This book is intended for mathematicians and physicists.

COVERAGE: The book is Volume IV of the Transactions of the Third All-Union Mathematical Conference, held in June and July 1956. The book is divided into two main parts. The first part contains summaries of the papers presented by Soviet scientists at the Conference that were not included in the first two volumes. The second part contains the text of reports submitted to the editor by non-Soviet scientists. In those cases when the non-Soviet scientist did not submit a copy of his paper to the editor, the title of the paper is cited and, if the paper was printed in a previous volume, reference is made to the appropriate volume. The papers, both Soviet and non-Soviet, cover various topics in number theory, algebra, differential and integral equations, function theory, functional analysis, probability theory, topology, mathematical problems of mechanics and physics, computational mathematics, mathematical logic and the foundations of mathematics, and the history of mathematics.

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25 (1) SOV/115-59-10-2/29

AUTHORS: Volkonskiy, V.A., Gol'dinov, M.A., Kessel'man, S.M., Nemirovskiy, A.S.

TITLE: The Analysis of Instrument Error Produced by Discrete Action Integrators

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 10, pp 4-6 (USSR)

ABSTRACT: An instrumental miscalculation of an integrator arises only when the φ_i deflection angle of the output shaft of an integrator varies from cycle to cycle and the lever which introduces the element to be integrated remains in a fixed position. This variation is caused, for instance, by delayed switch-off-and-on of the counter in each integration cycle. The miscalculation represents the difference between φ_i and the assembly average of the deflection angle φ_{oi} $\Delta\varphi_i = \varphi_i - \varphi_{oi}$ The corresponding miscalculation of the measured element for each integration cycle will be $\delta_u = K\Delta\varphi$ (1)

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where k is the proportional coefficient between the deflection angle and the measured element. The authors further describe an experimental evaluation method of an instrumental miscalculation and of the integration error derived from this miscalculation. The integration error corresponding to a time period (0, T) will be

$$\Delta_u = \int_0^T \delta_u (t)\, dt \qquad (2)$$

As the assembly average of an instrumental miscalculation $M\Delta_u = 0$, so the assembly average of integration error derived from this miscalculation $M\Delta_u$ is also 0. The variance of the integration error, derived from the formula (2) will be

$$D\Delta_u = \int_0^T \int_0^T R_u (t,s)\, dtds$$

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The Analysis of Instrument Error Produced by Discrete Action Integrators

where $R_u(t,s) = M[\Delta_u(t)\Delta_u(s)]$ - a correlation function of instrumental miscalculation. If we admit the stability and the ergodicity of the process then

$$D\Delta_u = \int_0^T \int_{-t}^{T-t} R_u(\tau)dtd\tau \simeq T\int_{-\infty}^{\infty} R_u(\tau)\,d\tau \qquad (3)$$

where $R_u(\tau) = R_u(0,\tau)$. The expression of a correlation connection being

$$\tau_u = \frac{1}{D\Delta_u}\int_0^{\infty} R_u(\tau)\,d\tau \qquad (4)$$

the (3) and (4) formulae give

$$D\Delta_u = 2T\tau_u D\Delta_u \qquad (5)$$

Thus, to determine the variance of the integration error $D\Delta_u$ we must know the variance of the instrumental miscalculation $D\Delta_u$ and the value τ_u. These values

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The Analysis of Instrument Error Produced by Discrete Action Integrators

were determined experimentally for integrators produced by the Khar'kovskiy zavod (Khar'kov Plant) "Kip" and by the "Manometr" Plant. A detailed description of this experiment is given. There are 3 graphs, 1 table and 1 Soviet reference.

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16(1),16(2)
AUTHORS: Volkonskiy,V.A., and Rozanov,Yu.A. SOV/52-4-2-5/13

TITLE: Some Limit Theorems for Random Functions. I

PERIODICAL: Teoriya veroyatnostey i yeye primeneniya, 1959, Vol 4, Nr 2, pp 186-207 (USSR)

ABSTRACT: The authors prove several limit theorems for random functions $H(\Delta)$ of the interval Δ. The functions $H(\Delta)$ satisfy the strong mixing condition

(1) $$\sup_t \sup_{A\in\mathfrak{M}_{-\infty}^t,\ B\in\mathfrak{M}_{t+\tau}^{\infty}} |P(AB) - P(A)P(B)| = \alpha(\tau) \to 0$$

for $\tau\to\infty$; here $\mathfrak{M}_s^t$ is the σ-algebra generated by events of the type $\{H(\Delta_1)<h_1,\ldots H(\Delta_n)<h_n\}$, where $\Delta_k\subseteq(s,t)$ and $h_1\ldots,h_n$ are arbitrary real numbers.

In §1 the authors investigate conditions under which additive functions $H(\Delta)$ of the interval $\Delta=[s,t)$ are asymptotically normal for $t-s\to\infty$. 4 theorems, 2 lemmas, and 5 examples are given; e.g.: Theorem: Given a family of stochastic processes $\xi(t)$ which satisfy (1) and for which

Some Limit Theorems for Random Functions. I SOV/52-4-2-5/13

$$\sigma^2(\Delta) = D\int_{\Delta}\xi(t)dt \asymp t-s\ , \quad \Delta = (t-s),$$

$$M|\xi(t)|^m \leqslant C_0$$

for a certain $m \geqslant 3$. Uniformly for all processes let

$$\alpha(\tau) = O\left(\tau^{-\frac{m+1}{m-2}}\right).$$

Then the random variables $\eta(\Delta)$, $\Delta = (s,t)$,

$$\eta(\Delta) = \frac{1}{\sigma(\Delta)}\int_{\Delta}\left[\xi(t) - M\xi(t)\right] dt$$

are asymptotically normal for $t-s \to \infty$, i.e.

$$F_{\eta(\Delta)}(x) \to \frac{1}{\sqrt{2\pi}}\int_{-\infty}^{x} e^{-\frac{x^2}{2}} dx$$

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Some Limit Theorems for Random Functions. I SOV/52-4-2-5/13

for $t-s\to\infty$, here uniformly for the whole family. In §2 the authors give conditions that spectral measures $\phi(\Delta)$ of stationary processes, $\Delta=(\lambda,\mu)$, for $\mu-\lambda\to 0$ are locally normal. 5 theorems, 2 lemmas, and 4 examples are given. One of the authors' theorems was proved independently by I.A. Ibragimov. The authors mention A.N.Kolmogorov, and M.S.Pinsker. There are 20 references, 12 of which are Soviet, 1 Polish, 3 American, 1 Dutch, and 3 English.

SUBMITTED: July 15, 1958

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16(1),16(2) SOV/52-4-2-6/13

AUTHOR: Volkonskiy, V.A.

TITLE: Continuous One-Dimensional Markov Processes and Additive Functionals Derived for Them

PERIODICAL: Teoriya veroyatnostey i yeye primeneniya, 1959, Vol 4, Nr 2, pp 208-211 (USSR)

ABSTRACT: According to the proposal of Ye.B.Dynkin the author describes continuous homogeneous Feller one-dimensional Markov processes being regular in a closed interval.
Theorem: Let X be a process of the above mentioned type. Then there exists a non-abrupting process $\tilde{X}$ of the same type with the property that X is a subprocess of a part of $\tilde{X}$.
A further theorem asserts that the infinitesimal operator of a process of the above mentioned type is the restriction of a certain explicitly given operator. There are 5 theorems and 1 lemma.
There are 4 Soviet references.

SUBMITTED: January 9, 1959

Card 1/1

VOLKONSKIY, V. A., Cand Phys-Math Sci (diss) -- "Additive functionals of Markov processes and random time substitution". Moscow, 1960. 3 pp (Moscow State U im M. V. Lomonosov), 150 copies (KL, No 12, 1960, 124)

NEMIROVSKIY, A.S.; VOLKONSKIY, Viktor Aleksandrovich, nauchnyy red.; KUZNETSOVA, M.I., red.izd-va; MATVEYEVA, A.Ye., tekhn.red.

[Integrators used in measuring instruments] Integratory izmeritel'nykh priborov. Moskva, Gos.izd-vo standartov, 1960. 231 p. (MIRA 13:12)

(Integrators)

VOLKONSKIY, V.A. (Moscow)

Ergodic theorem for the distribution of the duration of fades.
Teor. veroiat. i ee prim. 5 no.3:357-360 '60. (MIRA 13:9)
(Distribution (Probability theory))

30003

S/550/60/009/000/002/008
D251/D305

16,6100

AUTHOR: Volkonskiy, V.A.

TITLE: Additive functionals from Markov processes

SOURCE: Moskovskoye matematicheskoye obshchestvo. Trudy, v. 9, 1960, 143 - 189

TEXT: The results of this article were reported at a session of the Moscow Mathematical Association on November 24, 1959. The author commences by outlining the work of Ye.B. Dynkin (Ref. 1: Osnovaniye teorii markovskikh protsessov (Basic Theories of Markov Processes), M.-L. Fizmatgiz 1959), regarding the introduction of the additive functionals $\varphi_t(\omega)$, and their basic properties and conditions for continuity. Theorems on additive step-functionals are then considered. Theorem 2.1: If X is a standard process, φ_t is a additive step functional which is continuous on the left and

$$E_\varepsilon = \{x: P_x(\varphi_{+0} = \varepsilon) = 1\} \quad (0 < \varepsilon \leqslant \infty).$$

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Additive functionals from ...

Here P_x is almost definitive,

$$\varphi_t(\omega) = \begin{cases} \sum_{0<\varepsilon<\infty} \varepsilon \nu_\varepsilon(t, \omega) & \text{for } \nu_\infty(t, \omega) = 0 \\ \infty & \text{for } \nu_\infty(t, \omega) > 0 \end{cases} \qquad (2.1)$$

where $\nu_\varepsilon(t, \omega)$ is the number of the moments of time s, $0 \leq s < t$, where, $x_s(\omega) \in E_\varepsilon$ and $\nu_\varepsilon(t, \omega) > 0$ is not greater than for the calculated number of the values of ε. The theorem is p[illegible] means of certain lemmas and the satisfaction of the Kolmogorov-Cheimen equation. The following conditions are established: I. $\overline{P}(t, x, \Gamma)$ is an enumerably-additive non-negative function of the set Γ, and $\mathcal{B}$-dimensional in x for every Γ. Then for $t > 0$ and some $\Gamma \in \mathcal{B}$

$$Q(\Gamma) = \int_E \left[\int_\Gamma Q(dy)\, p(t, x, y) \right] Q(dx) = \int_\Gamma P(t, y, E)\, Q(dy),$$

and $$P(t, y, E) = 1$$

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Additive functionals from ...

corresponding to the measure Q. II. Suppose X is a canonical process (without loss of generality). For arbitrary $T > 0$, the isomorphism between the σ-algebras N_T and $\overline{N}_T$ is established

$$\{x_t(\omega) \in \Gamma\} \leftrightarrow \{\bar{x}_{T-t}(\omega) \in \Gamma\}. \qquad (2.3).$$

Then let

$$P(A) = \int_{\mathfrak{S}} Q(dx) P_x(A) \qquad (A \in N_T),$$

$$\overline{P}(\bar{A}) = \int_{\mathfrak{S}} Q(dx) \overline{P}_x(\bar{A}) \qquad (\bar{A} \in \overline{N}_T).$$

Theorem 2.2: Let X satisfy conditions I and II and let φ_t be a step additive functional from it which is continuous on the right. Then there exists a system of non-intersecting Borel subjects E_ε ($0 < \varepsilon \leq \infty$) of the space $\mathfrak{S}$ which satisfy equation (2.1) (P_x is almost definite). Theorem 2.3: For any continuous Fellerov reversible process all step additive functionals have the form (2.1). From the discussion of the strongly Fellerov process by I. Girsanov

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Additive functionals from ...

in the periodical Teoriya veroyatnosti i yeye primeniye (Theory of Probability and its Utilization) [Abstractor's note: Mentioned in foot-note. Further details not given] the following theorem follows: Theorem 2.4: Let X be a strongly Fellerov standard process bounded with respect to a system of compact sets. Let φ_t be an additive functional from X, continuous on the right and of the form (2.1). Also, the function $m(x) = M_x\varphi_\infty$ is bounded and the set of its points of discontinuity E is unattainable, i.e. $\tau_E = \zeta$ (P_x almost definite). Then $\varphi_t(\omega) \equiv 0$. Theorem 2.5: Let X satisfy the conditions of Theorem 2.4. Let a sequence of X_n be taken from X such that $\zeta_n \uparrow \zeta$ as $n \longrightarrow \infty$ for all ω and the function $M_x\zeta_n$ is bounded for every n and for any finite excessive function of X_n the set of points of discontinuity is unattainable. Then any additive functional from X of the form (2.1) has jumps at only infinite values. Continuous unimetric processes and their functionals are now considered. Theorem 3.1: Let $X = (x_t, \zeta, N_t, P_x, \vartheta_t)$ be a continuous

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Additive functionals from ...

unimetric Markov process in a metric space satisfying the following conditions: 1) $\lim_{t \uparrow \zeta(\omega)} x_t(w)$ exists, if $\zeta(\omega) < \infty$ and belongs to $\mathfrak{E}$; 2) There exist numbers $\varepsilon > 0$ and $\delta > 0$ such that $P_x\{\zeta > \varepsilon\} > \delta$ for all $x \in \mathfrak{E}$; Then there exists a homogeneous continuous nonterminable Markov process $\hat{X}$ such that X is a subprocess of $\hat{X}$. Theorem 3.2: Let X be a continuous Fellerov Markov process, regular within the segment $[r_1, r_2]$. Then there exists a nonterminable process $\hat{X}$, such that X is a subprocess of part of the process $\hat{X}$. Theorem 3.3: Let the nonterminable process X, which is regular in the segment $[r_1, r_2]$ be characterized by the functions u(x) and v(x) and let $T(\omega)$ be the moment of absorbtion. Then for any nondecreasing function m(x) on $[r_1, r_2]$ which is finite on (r_1, r_2), and any non-negative constants $\alpha(r_j)$ and $\beta(r_j)$, $(j = 1, 2;\ 0 \leq \alpha(r_j) < \infty,\ 0 \leq \beta(r_j) < \infty)$, the function

$$\varphi_t(\omega) = \int_0^{\min(t, T)-0} \frac{dm(x_s)}{dv}\, ds + \alpha(x_T) \min(0, t-T) + \beta(x_T)\, \sigma(t-T), \qquad (3.2)$$

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Additive functionals from ...

where $\sigma(t) = \begin{cases} 0 \text{ for } t < 0, \\ 1 \text{ for } t \geq 0, \end{cases}$

is an additive functional from X, and satisfies the property

$$P_x(\varphi_{T_y(\omega)}(\omega) < \infty) > 0. \qquad (3.1)$$

The converse is also true. There are 18 references: 13 Soviet-bloc and 5 non-Soviet-bloc. The references to the English-language publications read as follows: G.A. Hunt, Markov provesses and potentials, I. Illinois Journ. Math., No. 1, 1957, 44-93; J.L. Doob, Seminartingales and subharmonic functions, Trans.Amer.Math.Soc. 77 1954, 88-121; R. Blumenthal, An extended Markov property, Trans. Math.Soc., 85, No. 1, 1957, 52-65.

SUBMITTED: May 19, 1959

Card 6/6

NEMIROVSKIY, A.S.; VOLKONSKIY, V.A.

Selecting the number of checked points on the scale of an instrument. Izm. tekh. no. 1:5-10 Ja '61. (MIRA 14:1)
(Measuring instruments--Testing)

30312

S/115/61/000/010/001/005
E031/E435

1.5000

AUTHORS: Nemirovskiy, A.S., Volkonskiy, V.A.

TITLE: The accuracy of indirect measurements involving multiplication and numerical integration

PERIODICAL: Izmeritel'naya tekhnika, no.10, 1961, 1-7

TEXT: In this paper the methodical error in indirect measurements is investigated in the case when one of the variables is continuous and the other is discrete and both are stationary random functions of the time. The methodical error δQ depends on the character of the spectra of the processes and the time between two successive measurements. The error may be calculated from a knowledge of the dispersion of the error. The paper is mainly concerned with the evaluation of the integral for the dispersion over the plane defined by the variables λ and ω which are the spectral frequencies of the processes. There are 5 figures, 2 tables and 3 Soviet-bloc references.

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VOLKONSKIY, V.A. (Moscow)

Construction of inhomogeneous Markov processes by means of random substitution of time. Teor. veroiat. i ee prim. 6 no.1:47-56 '61. (MIRA 14:6)

(Markov processes)

VOLKONSKIY, V.A.; ROZANOV, Yu. A. (Moscow)

Some limit theorems for random functions. Part 2. Teor.veroiat.i ee prim. 6 no.2:202-215 '61. (MIRA 14:6)
(Limit theorems (Probabilities theory))

21799

S/103/61/022/004/006/014
B116/B212

16.6100
16,9500 (1031, 1121, 1132)

AUTHOR: Volkonskiy, V. A. (Moscow)

TITLE: Errors of measuring device controlling the changes of a variable in equal time intervals

PERIODICAL: Avtomatika i telemekhanika, v. 22, no. 4, 1961, 479-482

TEXT: The present paper deals with an investigation of a device that measures a certain variable quantity in discrete instants and gives a signal when this quantity will exceed the permissible level. The valuation of the sum of mean lengths of the overshootings are given, which are not noted due to the discrete control. The change of the variable quantity is treated as a steady random Gaussian process having a zero expectation and a known correlation function r_t. The sum of the mean lengths of the unnoticed overshootings exceeding the δ-level during a long observation time T has been determined with a given interval Δ between successive measurements. The equation

$$M_1 = TP(x_t > \delta) = T\left[1 - \Phi\left(\frac{\delta}{\sqrt{r_0}}\right)\right] \qquad (1)$$

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Errors of ...

is written down, where M_1 denotes the expectation of the sum of all overshooting lengths; M_2 is the expectation of the sum of lengths belonging to overshootings; $P(x_t>\delta)$ stands for the probability that the value of the process x_t will exceed the δ-level; r_0 denotes the dispersion of the process (value of the correlation function r_t at $t=0$), and

$\Phi(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{x} e^{-y^2/2}\, dy$; r_0'' denotes the value of the second derivative of r_t'' ($-r_0''$ denotes the dispersion of the process x_t'). The following equation is obtained for M_2:

$$M_2 = T \frac{-r_0'' \Delta^2 \delta}{6 (2\pi r_0)^{1/2}} e^{-\frac{\delta^2}{2r_0}} \left[1 + \frac{6 r_0}{\Delta \delta} \sqrt{\frac{2}{-r_0''}} \int_{-\infty}^{\infty} f(bu)\, p(u)\, du \right], \qquad (6)$$

(6), where

$$p(u) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}\left(u - \frac{r_0'' \delta}{r_0 \sqrt{B}}\right)^2},$$

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S/103/61/022/004/006/014
B116/B212

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$$f(G)=\begin{cases}\frac{1}{G}\left[1-\frac{G^2}{6}-\sqrt{2\pi}\,\frac{\Phi(G)-\Phi(0)}{G}\right] & \text{при } G>0,\\ -\frac{G}{6} & \text{при } G<0,\end{cases} \qquad (7)$$

(7).

$$b=\Delta\sqrt{\frac{1}{2}\left(\frac{r_0^{IV}}{-r_0''}+\frac{r_0''}{r_0}\right)}.$$

Since the process has been assumed to be steady and have a Gaussian distribution, formula (6) is substituted by the approximate formula

$$M_2\approx T\ 0{,}026\left(1-\frac{r_\Delta}{r_0}\right)\frac{\delta}{\sqrt{2\pi r_0}}e^{-\frac{\delta^2}{2r_0}}. \qquad (8)$$

(8).

The sum of the mean lengths of all overshootings and the sum of the mean lengths of unnoticed overshootings during a time interval T at a measuring interval Δ may be calculated from formulas (1) and (8). M_2 may be calculated with the help of graphical integration methods applied to formulas (6) and (7) if the process has a Gaussian distribution and a steady course, and if the dispersion of the process and its derivatives (r_0, r_0'', r_0^{IV}) are sufficiently known. There are 1 table and 1 Soviet-bloc reference.

SUBMITTED: June 23, 1960

Card 3/3

26224
S/103/61/022/009/005/014
D206/D304

16,8000 (1031, 1121, 1132)

AUTHOR: Volkonskiy, V.A. (Moscow)

TITLE: Estimating the effect of level quantization on the performance of digital automatic systems with random input

PERIODICAL: Avtomatika, i telemekhanika, v. 22, no. 9, 1961, 1187 - 1193

TEXT: In the present article the author considers how the probability characteristics of quantization noise vary with a random input and with the quantization step Δ tending to zero for an open and closed loop digital automatic system (ЦАС-ЦАС). If a Gaussian stationary process x(t) is applied to the input of an open loop automatic digital system, and if the bandwidth $f_{k_{max}}$ of the linear element does not exceed the average value f_x of the frequency of the input signal multiplied by β (where $\beta = \sigma'_x/\Delta$) when the quanti-

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Estimating the effect of ...

zation noise $\psi_\Delta x(t)$ can be considered as white noise, i.e. a process with a constant spectral density $0.3(\Delta^3/\sigma'_x)$ uncorrelated with the signal $x(t)(\sigma_x^1 = \sigma'_x f_x)$. In this the correlation function of the process $\delta_\Delta(t) = K\psi_\Delta X(t)$ may be taken as equal to

$$\rho_t = 0{,}3\frac{\Delta^3}{\sigma'_x}\int_{-\infty}^{\infty} k(s)\,k(t-s)\,ds.$$

in which the integrand represents the signal transformed signal $x(t)$ at the output terminals of the linear element having the transfer function $k^*(\lambda)$. For the closed loop system and same conditions the dispersion of the process $\delta_\Delta(t) = y_\Delta(t) - y_0(t)$ is given by

$$D\delta_\Delta(t) \leqslant 0{,}3\Delta^3\left(\frac{1}{\sqrt{\sigma'_x}} + \frac{1}{\sqrt{\sigma'_y}}\right)^2\int_{-\infty}^{\infty} k^2(s)\,ds.$$

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Estimating the effect of ...

where $\sigma_y^1 = \sigma_y f_x$ and σ_y given by $\sigma_y^2 = Dy_0(t)$, in which $y_0(t)$ the output signal of the system without quantization. Also, if the normalized mutual correlation function of the input signal $x(t)$ and of the output signal $y_0(t) = K\,x(t)$ of the system without quantization does not exceed $\rho \leq 1$ and $\beta \geq \sqrt{(2/1-\rho)}$, then the correlation function of the process $\delta_\Delta(t)$ may be taken as

$$0{,}3\Delta^3\left(\frac{1}{\sigma_x}+\frac{1}{\sigma_y}\right)\int_{-\infty}^{\infty} k(s)\,k(t-s)\,ds.$$

There is an appendix giving the derivation of the correlation function for the noise of a level quantized Gaussian process and the mutual correlation function of the signal and noise. There are 2 figures and 2 Soviet-bloc references.

SUBMITTED: February 18, 1961

Card 3/3

Transactions of the 6th Conf. on Probability Theory and Mathematical Statistics and of the Symposium on Distributions in Infinite-Dimensional Spaces held in Vil'nyus, 5-10 Sep '60. Vil'nyus Gospolitizdat Lit SSR, 1962. 493 p. 2500 copies printed

VOLKONSKIY, V. A.; NEMIROVSKIY, A. S.

Evaluating dynamic and integration errors of measuring instruments. Trudy inst. Kom. stand. mer i izm. prib. no.57:47-67 '62. (MIRA 15:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut Komiteta standartov, mer i izmeritel'nykh priborov pri Sovete Ministrov SSSR.

(Measuring instruments)

VOLKONSKIY, V.A. (Moskva); NEMIROVSKIY, A.S. (Moskva)

Methodical error of a multiplier-divider with discrete action.
Avtom. i telem. 24 no.10:1373-1379 O '63. (MIRA 16:11)

ACCESSION NR: AP4016034 S/0052/64/009/001/0079/0095

AUTHOR: Volkonskiy, V. A. (Moscow)

TITLE: Optimal estimate for the moment of origin of a signal in the presence of multiplicative high-frequency Gaussian noise

SOURCE: Teoriya veroyatnostey i yeye primeneniya, v. 9, no. 1, 1964, 79-95

TOPIC TAGS: optimal estimate, variance, correlation, spectral density, extremal estimate, Gaussian noise, white noise, nondistinct process, estimate, minimax solution

ABSTRACT: Let $\nu(t)$ be a stationary Gaussian random process with zero mathematical expectation and let $S(t)$ be a known positive continuous function. One observes the process, depending on the parameter λ,

$$\xi_\lambda(t) = S(t-\tau)\nu(\lambda t) \qquad (1)$$

on the interval $|t| \leq t_0$, where τ is an unknown parameter, $|\tau| < t_0$. τ is called the moment of origin of the signal. The author wants to find an estimate

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ACCESSION NR: AP4016034

$\hat{\tau}_\lambda(\xi_\lambda)$ of the parameter τ which is asymptotically optimal as $\lambda \to \infty$. He gives two definitions of processes which are nondistinct, (i.e., whose differences should not affect his estimates) both involving reasonable second order properties. Using the concepts of unbiasedness and minimum variance and the corresponding asymptotic properties, he looks for minimax solutions among a class of estimates which do not distinguish between processes which are nondistinct. He treats the case of white noise. Orig. art. has: 33 formulas.

ASSOCIATION: none

SUBMITTED: 11Jan62 DATE ACQ: 19Mar64 ENCL: 00

SUB CODE: MM NO REF SOV: 000 OTHER: 001

Card 2/2

VOLKONSKIY, V.A.

Asymptotic behavior properties of the simplest automata in games. Probl. pered. inform. 1 no.2:36-53 '65. (MIRA 18:7)

L 23581-66 EWT(1)/ETC(f)/EPF(n)-2/EWG(m) IJP(c) AT/GS

ACC NR: AT6008839 SOURCE CODE: UR/0000/65/000/000/0018/0027

AUTHOR: Akshanov, B. S.; Volkolupov, Yu. Ya.; Sinel'nikov, K. D.

ORG: none

TITLE: Investigation of injection and confinement of charged particles by a magnetic mirror trap

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps). Kiev, Naukova dumka, 1965, 18-27

TOPIC TAGS: magnetic trap, magnetic mirror ~~trap~~, plasma confinement, plasma injection, electron gun, ionization, charged particle

ABSTRACT: The present work describes experiments in which the injection of particles into magnetic mirror traps is accomplished using a circular electron gun generating directed flow of particles which pass through the magnetic cusp configuration into the mirror trap. At the opposite end of the mirror trap, an additional strong field coil is added to provide a reflecting barrier for those particles which can pass through the main trap. The injected beam was studied by the use of luminescent screens which show that the beams are sufficiently intense to cause ionization of the atoms in the magnetic trap. Another beam of low intensity was used for probing the plasma and the main beam. This beam probing technique led to the conclusion that almost all inject-

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ACC NR: AT6008839

ed particles stagnate in the trap region. The resulting space-charge lifetime was determined by the same technique. These results were obtained by introducing discriminating modulation on the probing beam. The results of these experiments confirm theoretical predictions of the mechanism converting linear flows into spiral ones. It was also found that plasma duration time corresponds to the burnout time (complete ionization) which creates a plasma of about $8 \cdot 10^{11}$ cm^{-3}. It is concluded that beam electron trapping was due not only to ionization and charge exchange but also to the development of beam instability. Orig. art. has: 6 figures.

SUB CODE: 20/ SUBM DATE: 20Oct65/ ORIG REF: 004/ OTH REF: 000

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L 23561-66 EWT(1)/ETC(f)/EPF(n)-2/EWG(m) IJP(c) GS/AT

ACC NR: AT6008840 SOURCE CODE: UR/0000/65/000/000/0027/0035

AUTHOR: Akshanov, B. S.; Volkolupov, Yu. Ya.; Sinel'nikov, K. D.

ORG: none

TITLE: Confinement of charged particles pulse-injected into a trap with stationary fields

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps). Kiev, Naukova dumka, 1965, 27-35

TOPIC TAGS: magnetic trap, electron gun, plasma injection, magnetic mirror, charged particle

ABSTRACT: Experimental injection of charged particles into magnetic traps is studied using high power electron guns in which the accelerating potential, amplitude and duration were regulated to produce square, half-sine, and sawtooth waves. The magnetic coils and field configuration (for injection through a cusp into a magnetic mirror with constricted far end) are shown in figure 1. Probing electron beams and luminescent screens were used to show that plasma confinement time is in the tens of microseconds and depends on such parameters as initial density, injection pulse time and amplitude. The luminescent screen surrounding the plasma gives evidence that the injected beam strikes the wall at critical energies. Plasma confinement time and the onset of a rapid breakup of the plasma are increasingly delayed as the initial pres-

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ACC NR: AT6008840

sure increases. The method employed can produce 10^{12} cm^{-3} plasma. The resulting plasma is very similar to one produced by continuous injection but it maintains high electron temperatures for a somewhat longer time. Orig. art. has: 6 figures.

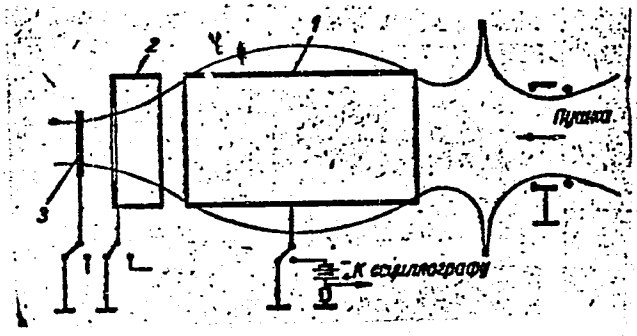

Figure 1.

SUB CODE: 20/ SUBM DATE: 20Oct65/ ORIG REF: 004/ OTH REF: 000

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L 23563-66 EWT(1)/ETC(f)/EPF(n)-2/ENG(m)/T IJP(c) GS/AT

ACC NR: AT6008841 SOURCE CODE: UR/0000/65/000/000/0035/0040

AUTHOR: Akshanov, B. S.; Volkolupov, Yu. Ya.; Sinel'nikov, K. D.

ORG: none

TITLE: Investigation of charged particle energy in a magnetic trap

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps). Kiev, Naukova dumka, 1965, 35-40

TOPIC TAGS: magnetic trap, plasma diagnostics, charged particle, plasma injection

ABSTRACT: Experimental investigation of the energy distribution of charged particles in a plasma formed by beam injection is described. The study is based on observation of the particles ejected from the magnetic trap and their energy determination and on the correlation with the high frequency oscillations induced by beam-plasma interaction. A brief description and results of the diagnostic methods (electrostatic analyzer, time of flight mass spectrometer, scintillation detectors) are given. The electrostatic analyzer (developed by the authors) can measure electron and ion energies and provides integrated results. The experiments were conducted with pulsed injection of particles. The lifetimes of resulting plasmas were measured as a function of injection energy. The measurement of electron energy provides their distribution up to 30 kev. The electron absorption method indicates that electrons with 100 kev energies

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ACC NR: AT6008841

are generated in the magnetic trap employed in the experiment. It is believed that the generation of such energetic electrons is intimately connected with the observed high frequency oscillations of the beam-plasma system. Orig. art. has: 6 figures.

SUB CODE: 20/ SUBM DATE: 20Oct65/ ORIG REF: 002/ OTH REF: 002

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L 28488-66 EPF(n)-2/EWT(1)/ETC(f)/EWG(m)/T IJP(c) AT

ACC NR: AP6013114 SOURCE CODE: UR/0057/66/036/004/0608/0611

AUTHOR: Akshanov,B.S.; Volkolupov,Yu.Ya.; Sinel'nikov,K.D.

ORG: none

TITLE: Investigation of the energy distribution of charged particles in a magnetic trap

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 4, 1966, 608-611

TOPIC TAGS: hydrogen plasma, plasma confinement, electron beam, magnetic mirror, electron energy

ABSTRACT: The authors' investigations of injection and entrapment of helical electron beams in a magnetic mirror trap (ZhTF, 36, 595, 604, 1966/ see Abstracts AP6013112 and AP6013113/) have been continued. To the apparatus described in the preceeding papers has been added an electrostatic analyzer similar to that described by H.P. Eubank and T.D.Wilkerson (Rev.Sci.Instr. 34, No. 1, 14-21,1963). With the aid of this analyzer the energy distribution of charged particles escaping from the magnetic trap was investigated. The energies of electrons beyond the range of the analyzer (30keV) were measured with a scintillator and aluminum absorbers. Ions with energies above 250 eV and electrons with energies up to 100 keV were observed. Higher energy electrons remained confined in the trap longer than did lower energy ones. Under

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L 28488-66
ACC NR: AP6013114

conditions in which 10 keV electrons were confined for 38 millisec, 30 keV electrons remained confined for 85 millisec. The presence of electrons with energies much higher than the energies of the injected electrons (5keV) is ascribed to interaction with the plasma oscillations that were observed to develop (loc.cit.supra). These oscillations decreased im amplitude and the numbers of high energy electrons simultaneously decreased when the pitch of the injected electron trajectories was increased. During the process of "burning out" of the neutral gas, discussed in the preceeding papers, the spectrum of the high frequency oscillations became nearly continuous and extended beyond 10^{10} Hz, with maxima near the Langmuir and Larmor frequencies. Orig. art. has: 6 figures.

SUB CODE: 20 SUBM DATE: 18Jul64 ORIG. REF: 004 OTH REF: 003

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L 28489-66 EPF(n)-2/EWT(1)/ETC(f)/EWG(m)/T IJP(c) AT

ACC NR: AP6013113 SOURCE CODE: UR/0057/66/036/004/0603/0607

AUTHOR: Akshanov,B.S.; Volkolupov,Yu.Ya.; Sinel'nikov,K.D.

ORG: none

TITLE: Capture of charged particles injected pulsewise into a constant field trap

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 4, 1966, 603-607

TOPIC TAGS: hydrogen plasma, plasma confinement, plasma oscillation, electron beam, magnetic mirror,

ABSTRACT: The authors have continued their investigation of injection and entrapment of helical electron beams in a magnetic mirror trap, employing the apparatus described in the preceeding paper (ZhTF, 36, 595, 1966/see Abstract AP6013112/). Experiments performed with pulsed beams are discussed in the present paper. Preliminary experiments with square pulses of different durations showed that plasma could be accumulated in the trap within times of the order of 100 microseconds. Experiments with saw-tooth and sinusoidal pulses were accordingly undertaken. With sinusoidal pulses of several milliseconds duration there were frequently observed two moments of maximum plasma density, a maximum occurring each time the electron energy passed through the critical valve for formation of a low pitch helical trajectory. The plasmas produced by pulsed beams were very similar in density and other characteristics

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ACC NR: AP6013113

to those obtained with continuous injection. The plasmas decayed slowly (sometimes very slowly) for a considerable time (tens of milliseconds), after which they frequently suddenly collapsed. This behavior may be due to the presence in the plasma of high energy electrons, the confinement time of which, as the authors have shown (ZhTF, 36, 608, 1966/ see Abstract AP6013114/), increases with their energy and which, for unknown reasons, escape from the plasma with anomalous rapidity under certain conditions. The confinement time of the plasma increased with increasing pressure of the working gas. This may be due to the influence of the high frequency oscillations that were observed in the plasmas at high pressures and high beam currents and covered a very wide range of frequencies extending up to 11 500 MHz, the highest frequency that could be recorded with the available instrument. The process of "burning out" the neutral gas, previously observed with continuous injection, was also observed with pulsed injection. Plasma densities of the order of 10^{12} cm^{-3}, as determined from the cutoff of 3 cm microwaves, were obtained . Orig. art. has: 5 figures.

SUB CODE: 20 SUBM DATE: 18Jul64 ORIG. REF: 004

Card 2/2 CC

VOLKONSKIY, Yu. N.

86-58-6-13/34

AUTHOR: Baranov, A. M., Guards Engr Col Retd, Candidate of Geographic Sciences, and Volkonskiy, Yu. N., Engr Maj, Candidate of Physical and Mathematical Sciences

TITLE: The Tropopause and Flying Conditions in It (Tropopauza i usloviya poletov v ney)

PERIODICAL: Vestnik vozdushnogo flota, 1958, Nr 6, pp 40-43 (USSR)

ABSTRACT: The article describes the special features of the tropopause and the peculiarities of flight in it. The altitude of the tropopause varies considerably, depending on the geographic latitude, the season of the year, and the atmospheric processes. Over the polar regions its altitude is 8-9 km, over the regions of temperate climate it is 10-12 km, and it reaches its highest altitude of 16-18 km over the equatorial regions. The thickness of the tropopause layer varies from several hundred meters to several kilometers (1-3 km). The temperature in the tropopause varies from -34° to -75°C. Pilots may encounter turbulent air of great intensity when flying in this layer of the atmosphere. In such cases pilots have to discontinue their climb, switch off the autopilot, establish the air speed as shown in the instructions, and avoid sharp maneuvers in piloting their aircraft. If the piloting of aircraft becomes impossible because of vigorous bumpiness, the pilots have to change their flight altitude. Particular attention should be paid to weather conditions when flying in the zone of thunderstorm activities.

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The Tropopause and Flying Conditions (Cont.)

Flights in thunderstorms and vigorous cumulus clouds are categorically forbidden. For the detection of thunderstorm cells, the available airborne radar devices should be used. If a crew accidentally gets into such clouds, it has to switch off all radio sets and come out of the clouds. When forced to fly in such clouds, the pilots should avoid banking their aircraft in every way possible. Very often the pilots have to make great physical efforts in the use of ailerons. The crews also have to make preparations for the prevention of icing. The radiosonde serves as the basic source of information about the altitude of the tropopause, and tropopause maps are compiled from the data which is obtained.

AVAILABLE: Library of Congress

Card 2/2

S/115/63/000/004/001/011
E140/E135

AUTHORS: Nemirovskiy A.S., and Volkonskiy V.A.

TITLE: Approximation error in the discrete measurements of analog quantities

PERIODICAL: Izmeritel'naya tekhnika, no.4, 1963, 1-6

TEXT: In analog-digital conversion followed by digital-analog reconversion, the difference between the final analog value and the input (initial) analog value, the measured quantity, constitutes a methodic quantification error, and is a function of time. The article discusses two methods of interpolation in current use, stepwise and linear (trapezoidal), and signal restoration by the passage of impulses through a lowpass filter, with a view to determining the quantification error when measuring a realisation of a random stationary process. The authors find that linear interpolation is superior to stepwise, and that the method of signal restoration by transmission of impulses through a lowpass filter requires too high a repetition frequency.
There is 1 figure.

Card 1/1

NEMIROVSKIY, A.S.; VOLKONSKIY, V.A.

Approximation error in discrete measurements of continuous values. Izm.tekh. no.4:1-6 Ap '63. (MIRA 16:5)
(Mensuration)

VOLKONSKIY, Yu.N.

Causes of variations in the height of the tropopause. Meteor i gidrolog. no.12:27-29 D '57. (MIRA 12:4)
(Atmosphere)

VOLKONSKIY, Yu. N.

Accuracy of determining the position of the tropopause. Probl.Arkt. no.3:109-110 '58. (MIRA 12:1)
(Atmosphere)

VOLKONSKIY, Yu.N.

Using empirical influence functions in forecasting the position of the tropopause. Probl. Arkt. no.2:121-125 '57. (MIRA 11:12)
(Atmosphere)

BARANOV, A.M., gvardii inzh.-polkovnik, dots., kand. geograf. nauk;
VOLKOHSKIY, Yu. H., inzh.-mayor, kand. fiz.-mat. nauk

Tropopause and the conditions of flights in it. Vest. Vozd. Fl. 41 no. 6:40-43 Je '58. (MIRA 11:7)
(Navigation(Aeronautics))

50-12-5/19

AUTHOR: Volkonskiy, Yu. N.

TITLE: On the Causes of the Variation of Position of the Tropopause (O prichinakh izmeneniy polozheniya tropopauzy)

PERIODICAL: Meteorologiya i Gidrologiya, 1957, Nr 12, pp. 27 - 29 (USSR)

ABSTRACT: In the kinematic and dynamic theory it is assumed that the velocity of displacement of the tropopause coincides with the velocity of air currents, however, in the first case the horizontal displacement especially is investigated, whilst in the second case the main part is appropriated to the vertical current.
The "adiabatic scheme" by O. G. Krichak is considerable, where the variation of the height of the tropopause is interpreted as result of the modification of the stratification curve in greater heights. The main cause is explained by the fact of different intensity of the vertical motions and of the processes of the adiabatic cooling and heating in the upper troposphere and in the lower stratosphere, which are connected with the latter ones.
A detailed statement of the hydrodynamic theory of the surfaces of the weak penetration is given in the works by N. G. Kochin.
As it already has been mentioned, all these computations are basing on assumptions about the formation of substance of the tropopause

Card 1/2

On the Causes of the Variation of Position of the Tropopause

(hypotheses by Palmen and Byerknes) or about the adiabatic behavior of the processes in the tropopause zone. (Hypothesis by Krichak). If one of these computations is right, the individual alteration of the height of the tropopause must be completely determind by the vertical motions in its zone, therewith it must be possible to compute the velocity of the vertical motions by means of the adiabatic method.
For the purpose of carrying out of the corresponding computations 100 sets of charts of the barometric topography of 1956 were selected. On the charts of the absolute topography the trajectories of the particles are recorded for 24 hours for the central regions of the European part of the USSR, and the value of the vertical velocity is computed, averaged over 24 hours and over the trajectory, by means of the adiabatic method. Then the transmission of substance is not the only one and also not the main cause of the variation of height of the tropopause. There are 6 references, 3 of which are Slavic.

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Card 2/2 1. Meteorology 2. Atmosphere-Conditions

VOLKOPYALOV, B., prof.

Professor A.P.Dmitrochenko's 60th birthday. Zhivotnovodstvo 23 no.5:85 My '61. (MIRA 16:2)
(Dmitrochenko, Aleksandr Petrovich, 1901-)

VOLKOPYALOV, Boris Petrovich, prof.; MAGON, E.E., red.; FRIDMAN, Z.L., tekhn. red.; BARANOVA, L.G., tekhn. red.

[Swine raising] Svinovodstvo. 3., perer. izd. Moskva, Sel'khozizdat, 1963. 380 p. (MIRA 16:11)
(Swine)

USSR / Farm Animals. Swine Q

Abs Jour: Ref Zhur-Biol., No 5, 1958, 21488

Author : Volkopyalov B. P., Spiridonova A. G., Lebedeva T. B., Matuskova A. N.

Inst :

Title : The Use of Antibiotics in Swine Breeding (Primeneniye antibiotikov v svinovodstve)

Orig Pub: Svinovodstvo, 1957, No 7, 31-32

Abstract: The use of biomycin and penicillin in raising starveling young pigs had a beneficial effect on their organism. For an experimental period which lasted 53 and 38 days, the test pigs were administered antibiotics daily. No loss occurred among them, while in the two control groups the pigs perished to the extent of 16.7 and 11.7%. The best results in the treatment with biomycin were achieved when this drug was

Card 1/2

USSR / Farm Animals. Swine

Q

Abs Jour: Ref Zhur-Biol., No 5, 1958, 21488

Abstract: administered in tablets of 100,000 U., 10 mg. per head, mixed with concentrates.

Card 2/2

VOLKOVYAKOV, S. P. Dr. (Prof.) of Vet Agricultural Sciences

Hog Raising, Moscow, Leningrad, 1950

VOLKOPYALOV, Boris Petrovich, professor; GOL'DSHTEYN, S.A., redaktor; CHUNAYEVA, Z.V., tekhnicheskiy redaktor

[Swine breeding] Svinovodstvo. Izd. 2-oe, perer. Moskva, Gos. izd-vo selkhoz. lit-ry, 1956. 263 p. (MLRA 10:1)
(Swine breeding)

VOLKOPYALOV, Boris Petrovich

[Swine breeding] Svinovodstvo. 3., perer. izd. Moskva, Gos.izd-vo sel'khoz. lit-ry, 1958. 240 p. (MIRA 16:4)
(Swine breeding)

VOLKOSLAVSKAYA, E. N.

Chemical Abst.
Vol. 48
Apr 10, 1954,
Biological Chemistry

Concentration of cellular juice, water content, and dry matter in internodes of some plants in connection with the polarity phenomenon. G. Kh. Molotkovskii and E. N. Volkoslavskaya. *Doklady Akad. Nauk S.S.S.R.* 77, 1081-3(1953); cf. *ibid.* 82, No. 5(1952); *C.A.* 46, 8201c.—In the following study the concn. of cellular juice was detd. by mech. expression of plant tissue and detn. of n of the exudate. H_2O content was detd. by drying to 105°. Detns. made on internodes of *Dahlia variabilis*, *Silphium laciniatum*, *Canna indica*, *Bacconia cordata*, *Polygonum sachalinense*, and *Zea mays* show the following: Water content in the lower regions of the plant stems is greater than in upper ones, with the exception of *Ricinus communis*. The base of each internode has higher H_2O content than the top portion. The distribution of dry matter is reverse to that of H_2O, again with exception of *Ricinus*. Concn. of cellular juice rises as one ascends the plant stem. In *Bacconia* during vegetation period (early stage) no differences in concn. of cellular juice was observed at the borders of the various internodes; this lack of differentiation ceased at the late flowering stage. The variations of H_2O and dry-matter content comprise a partial explanation for the phenomenon of changing polarity of various plant parts. The cellular juice concn., H_2O, and dry-matter content show a jagged, saw-tooth plot against the vertical distance up the stem.

G. M. Kosolapoff

VOLKO-STAROHORSKY, J.

S. PRAT, Sbornik Masarykovy Akad. Prace 8, No. 5, 1-19, 1934

VOLKO-STAROHORSKY, J.
S. PRAT, Sborn. Masaryk. Akad. Prace, 1934, 8, No. 5, 1-19

VOLKOSH, G.

Ship workshop. Blok.agit.ved.transp. no.8:25-30 Ap '56.
(MLRA 9:7)

1.Starshiy mekhanik parokhoda "Aziya".
(Ships--Maintenance and repair)